AMENDMENT TO THE CLAIMS

Please amend the claims as follows:

1. (Currently amended) A bonding apparatus for a wire bonding machine comprising:

a bonding tool coupled to an ultrasonic transducer, said transducer comprising:

a giant magnetostrictive element,

a fastener for holding the giant magnetostrictive element under mechanical pressure,

a first field generator for providing a magnetic bias field,

a second field generator for providing a magnetic drive field, and

a magnetic circuit for channeling the magnetic fields in the giant magnetostrictive element, wherein said giant magnetostrictive element is a composite comprising two or more rare-earth-based giant magnetostrictive alloy parts separated from one another only by a layer of passive polymeric material.

2. (Previously presented) The apparatus of claim 1 wherein the giant magnetostrictive element is a rare-earth-alloy-based material.

3. (Previously presented) The apparatus of claim 1 wherein the giant magnetostrictive element is Terfenol-D and its composites.

4. (Previously presented) The apparatus of claim 1 wherein the giant magnetostrictive element is cylindrical with a central hole.

5. (Cancelled)

6. (Previously presented) The apparatus of claim 1 wherein the fastener is a threaded shaft and a nut made of nonmagnetic metallic material.

7. (Previously presented) The apparatus of claim 1 wherein the first field generator is a permanent magnet.

8. (Previously presented) The apparatus of claim 1 wherein the second field generator is an electric coil.

9. (Previously presented) The apparatus of claim 1 wherein the magnetic circuit comprises a pair of magnetic return-path rings and a magnetic return-path cylinder having high-permeability, high-resistivity and high-saturation.

10. (Currently amended) A bonding apparatus for a wire bonding machine comprising:

a horn having a bonding tool at a smaller end and a mounting collar at an opposite end, and

an ultrasonic transducer coupled to the horn and comprising a giant magnetostrictive element, a fastener for holding the giant magnetostrictive element under mechanical pressure, a first field generator for providing a magnetic bias field, a second field generator for providing a magnetic drive field, and a magnetic circuit for channeling the magnetic fields in the giant magnetostrictive element ,

wherein the giant magnetostrictive element is a composite comprising two or more rare-earth-based giant magnetostrictive alloy parts separated from one another only by a layer of passive polymeric material.

11. (Previously presented) The apparatus of claim 10 wherein the giant magnetostrictive element is a rare-earth-alloy-based material.

12. (Previously presented) The apparatus of claim 10 wherein the giant magnetostrictive element is Terfenol-D and its composites.

13. (Previously presented) The apparatus of claim 10 wherein the giant magnetostrictive element is cylindrical with a central hole.

14. (Cancelled)

15. (Previously presented) The apparatus of claim 10 wherein the fastener is a threaded shaft and a nut made of nonmagnetic metallic material.

16. (Previously presented) The apparatus of claim 10 wherein the first field generator is a permanent magnet.

17. (Previously presented) The apparatus of claim 10 wherein the second field generator is an electric coil.

18. (Previously presented) The apparatus of claim 10 wherein the magnetic circuit comprises a pair of magnetic return-path rings and a magnetic return-path cylinder having high-permeability, high-resistivity and high-saturation.

19. (Previously presented) The apparatus of claim 1 wherein the giant magnetostrictive element comprises an aperture longitudinally connecting a first end of the element to an opposing second end of the element and the fastener comprises a longitudinally extending central portion disposed within the giant magnetostrictive element aperture, a first portion extending from the first end of the element, a first thrust face attached to the first portion adjacent the element first end, a second end extending from the second end of the element and a

second thrust face adjacent the element second end attached to the second portion, wherein the fastener is made of nonmagnetic metallic material.

20. (Currently amended) A bonding apparatus for a wire bonding machine comprising:

a bonding tool coupled to an ultrasonic transducer, said ultrasonic transducer comprising:

a central supporting member,

a giant magnetostrictive element surrounding the supporting member, said giant magnetostrictive element having a first end and a second end and comprising two or more rare-earth based giant magnetostrictive alloys ~~and a passive polymeric material~~,

a pair of permanent ~~magnet~~ magnets surrounding the supporting member ~~adjacent the giant magnetostrictive element for producing a magnetic bias field~~, one of the pair of permanent magnets located at the first end of the giant magnetostrictive element and the other one of the pair of permanent magnets located at the second end of the giant magnetostrictive element,

a fastener for holding the giant magnetostrictive element and the permanent ~~magnetic~~ magnets under mechanical pressure on the supporting member,

a coil surrounding the giant magnetostrictive element for providing a magnetic driving field, and

a magnetic circuit surrounding the giant magnetostrictive element, permanent magnetic and coil.